PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
P697PC00		

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/DK 03/00901	18.12.2003	20.12.2002

International Patent Classification (IPC) or both national classification and IPC
C07K14/705

Applicant
ENKAM PHARMACEUTICALS A/S et al.

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 14 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☒ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
25.06.2004	22.06.2005

Name and mailing address of the international preliminary examining authority:	Authorized Officer
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK 03/00901

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-72 as originally filed

Claims, Numbers

1-45 received on 27.05.2005 with letter of 24.05.2005

Drawings, Figures

1-11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

   ☐ the entire international application,

   ☒ claims Nos. dealing with SEQ.ID.NOS other than SEQ.ID.NOS. 1 and 9

   because:

   ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

   ☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

   ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

   ☒ no international search report has been established for the said claims Nos. for subject-matter relating to sequences other than SEQ.ID.NOS. 1 and 9

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

   ☐ the written form has not been furnished or does not comply with the Standard.

   ☐ the computer readable form has not been furnished or does not comply with the Standard.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:

   ☐ restricted the claims.

   ☐ paid additional fees.

   ☐ paid additional fees under protest.

   ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

☐ complied with.

☒ not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

☐ all parts.

☒ the parts relating to claims Nos. parts relating to SEq.ID.NOS. 1 and 9 .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1-45
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-45
Industrial applicability (IA)	Yes:	Claims	1-45
	No:	Claims	

2. Citations and explanations

see separate sheet

SECTION III----------

It is pointed out that only SEQ.ID.NOS. 1 and 9 have been searched. Correspondingly, only subject-matter relating to these sequences can be taken into consideration in this IPER.

SECTION IV----------

For the reasons already identified by the ISA this Authority also is of the opinion that present application lacks unity in so far as it relates to SEQ.ID.NOS. 1 and 9 which are not linked by a common inventive concept.

SECTION V----------

In its broadest meaning present claims relate to a compound capable of interfering with the interaction between a functional cell surface receptor (see claim 4) and a polypeptide having a binding site to said functional receptor wherein said compound can be a variant or a homologue of an amino acid sequence comprising a sequence selected from SEQ.ID.NOS. 2-146. Hence, due to this broad definition basically any readily available compound suitable to alter interactions between cell surface receptors, inclusive ATP- which is the only example given in present application - is encompassed by present claims 1-17 (see e.g. Skladchikova G. et al., J. of Neuroscience Research 57:207-218 (1999) (1) and WO 97/38708 (2)). Therefore, novelty of these claims cannot be acknowledged.

In addition, due to the terms "fragment" and "variant" used in claims 39 and 40 novelty of these claims cannot be acknowleged either.
The same applies correspondingly to all other claims containing at least one of these expressions since due to these terms the scope encompassed by the claims in question is completely obscure and one cannot rule out that the corresponding claims cover the use of available compounds well-known for the purpose defined in present claims or that the claims are directed to methods of preparing well-known compounds.

Finally, in view of the teachings of (1) and (2) novelty and inventive step of claims 18-

20 and 31-36 cannot be acknowledged either.

Further comments:

1). This Authority takes the view that claim 1 does not meet the requirements of Art. 34(2)(b) PCT since no basis can be found in the application as filed for "contiguous amino acid sequence of 6 to 16 amino acid residues". Claim 21 referred to by the Applicant to show a basis for this amendment only relates to peptides containing at least 6 to 16 amino acid residues capable of forming a strand-loop strand fold. However, by omitting this functional feature the amendment made in claim 1 is an extension of the content of the application as filed contrary to the requirements given in Art. 34(2)(b) PCT. Moreover, original claim 21 relates to a peptide having a binding site to the receptor and not to a compound!

2). Claims containing at least one of the expressions "fragments", "variants", "homologues" are unclear. Relating to this it is emphasized that a claim must be clear when seen alone, i.e. without the context of the description. Due to that lack of clarity objections under novelty arise (see above).

3). With respect to claim 2 the question arises "heterologous" compared to what?

4). The reference in claim 4 to claim 1 is not deemed correct since the scope of claim 4 is broader compared to the scope of claim 1- according to claim 4 the cell surface receptor can be a fragment, variant or homologue of FGFR1 whereas according to claim 1 the cell surface receptor is FGFR1. The same applies to claim 8- said claim lists a number of cell surface receptor proteins which are not recited in claim 1. Correspondingly, the reference in claim 8 to claim 1 is incorrect.

5). Claims relating to the medical use of the claimed compound lack **technical** support by the description (Art. 6 PCT). Correspondingly, objections under Art. 5 PCT also arise since there are no facts and data showing that the claimed compounds are actually suitable for the claimed use.

6). Claim 36 is deemed redundant in view of claims 18 or 35, respectively.

7). The only compound taught in present application which is capable of interfering with the interaction between a cell surface receptor and a ligand of said receptor is ATP. Hence, with respect to subject-matter relating to other compounds an objection under Art. 6 PCT arises since the application fails to technically support the whole scope claimed. Moreover, due to the absence of examples which would fall under claim 1 (with exception of ATP) the existence of other compounds falling under the scope of claim 1 is completely speculative. Correspondingly, objections under Art. 5 PCT also arise.